ABSTRACT OF THE DISCLOSURE

A digital image processing-based system and method are disclosed for quantitatively assessing nucleic acid species expressed in a microarray. The microarray is a grid of a plurality of sub-grids of the nucleic acid species. The system includes a scanner that

5   has a digital scanning sensor that scans the microarray and transmits from an output a digital image of the microarray, and a computer that receives the digital image of the microarray from the scanner and then processes the digital image, detecting an expression signal of the nucleic acid species, segmenting the expression signal, calculating a measure of the segmented expression signal, and providing the measure at the output of the computer. Prior

10   to segmenting the expression signal for a nucleic acid species, the expression signal is characterized by a center pixel in the digital image and an approximate radius around the center pixel. The computer segments the expression signal by (a) tentatively classifying pixels within the approximate radius as signal pixels and those outside the approximate radius as background pixels, (b) determining major intensity modes for the signal pixels and

15   for the background pixels, and (c) using the major intensity modes, reclassifying the signal and background pixels depending on each pixel's intensity relative to the major intensity modes.